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EXAMINER	
THOMPSON, JAMES A	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/739,682	NAKAMURA, HIROAKI	
	Examiner	Art Unit	
	James A. Thompson	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 June 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 December 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 14 June 2006 have been fully considered but they are not persuasive.

Applicant argues that the combination of Kishida (US Patent 5,287,418) in view of Tamura (US Patent 5,517,333) does not teach that the basic preliminary set characteristics relate to expansion or compression characteristics; and that the characterizes are not prestored; and thus the characteristic used is "thus selected".

Examiner replies that Applicant's description of the precise weighting of the curves Y1 and Y2 (taught by Tamura) does not overcome the rejection set forth in the previous office action, mailed 14 June 2006, since the details of weighting Y1 and Y2 are not relied upon for the combination set forth in said previous office action. The combination of Kishida and Tamura set forth in said previous office action first demonstrates that Kishida teaches a plurality of basic gradation conversion characteristics, that are preliminarily set, for a gradation conversion of image data (figure 2(S1) and column 4, lines 16-21 of Kishida). This is a very general teaching with respect to gradation conversion, and Kishida simply does not teach the particular details of the gradation conversion characteristics. The teachings of Tamura, specifically the expansion and compression characteristics of Y1 and Y2, are used to modify the teachings of Kishida to produce a system taught by the combination of Kishida in view of Tamura. Kishida provides the overall structure and framework, while Tamura simply provides some

details with respect to the gradation conversion characteristics themselves.

While claim 1 specifically recites that the characteristics are "preliminarily set" rather than "prestored", Kishida does also teaches that the basic gradation conversion characteristics are in fact prestored as well (column 3, lines 19-21 of Kishida).

Finally, claim 1 recites that the thus selected one or more basic expansion/compression characteristics are used to compress or expand the gradation of the image data (figure 3; column 3, lines 15-22; and column 4, lines 47-56 of Kishida). While weighting may also be a part of the overall process, nothing in claim 1 forbids this. Claim 1 merely recites that the thus selected one or more basic expansion/compression characteristics are *used* to compress or expand the gradation of the image data. Applicant contends that using the weight coefficients generates a separate gradation characteristic unique to the image [see page 6, lines 13-18 of Applicant's present arguments], and could thus not be preliminarily set and later selected from. However, the weighting taught by Kishida is not a part of the selecting process. The preliminarily stored characteristic curves are selected for use in processing the image data. The weighting factors are applied to the thus selected characteristic curves in order to process the image data. The characteristic curves are specifically expansion or compression characteristics, as taught by Tamura and set forth in the combination of Kishida in view of Tamura. Thus, the recitation of claim 1 is indeed fully taught by the combination of Kishida in view of Tamura.

Applicant argues that Kishida in view of Tamura does not teach that the basic preliminary set characteristics represent luminance data created from the image data *and low pass filtered.*

Examiner replies that the resultant expansion characteristic or compression characteristic shown in figure 14 of Tamura (Y'/Y) requires low-pass filtering. While other factors also play a role in the resultant expansion/compression characteristic, low-pass filtering is still performed on the luminance data (Y) to determine the resultant expansion/compression characteristic (figure 14 and column 8, line 61 to column 9, line 6 of Tamura). This low-pass filtered luminance data forms the expansion/compression characteristic curve, which *by combination* would be the preliminarily set gradation characteristic in the system of Kishida.

While the low-pass filtering taught by Tamura does require the image data itself, so does the "preliminarily set" basic expansion/compression characteristics recited in claim 1 since each characteristic is "representing an input/output relationship of luminance data *created from the image data* and low-pass filtered" [emphasis added]. Thus, in the sense that "preliminarily set" is taken to mean that no knowledge of the image data to be processed is required, claim 1 contains an inherent contradiction since the characteristics cannot be preliminarily set if the characteristics are to represent an input/output relationship of luminance data *created from the image data.* Even if said luminance data simply corresponds to a range of luminance values, information from the image data itself is still required, and thus the characteristics cannot be preliminarily set.

However, in the sense that "preliminarily set" is taken to mean simply that the basic expansion/compression characteristics are set before the processing of the image data which produces an output, claim 1 as recited is indeed taught by the combination of Kishida in view of Tamura since the characteristics taught by Tamura are simply used to modify the teachings of Kishida with respect to the exact nature of the preliminarily stored characteristics.

Applicant argues that, with regard to claims 16, 18 and 21, Kishida in view of Tamura does not teach that at least two basic compression characteristics and basic expansion characteristics, as selected characteristic sets, are cascaded.

Examiner replies that the characteristics are in fact cascaded, as shown both in figure 3 of Kishida and in the equation set forth in column 4, lines 15-22 of Kishida. A cascaded curve, such as set forth in Kishida, results in an amalgamation of the properties of both curves. Thus, the individual properties of both curves are used to produce a resultant curve. Weighting each curve does not destroy the properties of each curve. Each curve is simply multiplied by a factor. The actual shape remains the same. Furthermore, a cascading of two curves would, by Applicant's standards, also result in a curve that retains none of the characteristics of the original reference curves since, by cascading the two curves, a resultant curve with a shape different than either of the two individual curves is formed.

Finally, claims 16, 18 and 21 do not recite that the resultant cascaded curve has to retain aspects of the two curves which are used in the cascading, nor is such a feature inherent in the recited limitations. Claims 16, 18 and 21 simply recite that the two curves are cascaded. Applicant is respectfully

reminded that, although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicant argues that the specific limitations recited in claim 20 are not taught by Kishida in view of Tamura.

Examiner replies that, as discussed on page 19 of said previous office action, figure 3 of Kishida shows one curve ($f_1(x)$) which is on the upper level side of $f_d(x)$, which is the curve which sets the predetermined level for an input value of the luminance data. Two basic compression or expansion characteristics are selected, namely $f_1(x)$ and $f_2(x)$. The curves $f_1(x)$ and $f_2(x)$ are basic compression or expansion characteristics by virtue of the combination of Kishida and Tamura. As can clearly be seen in figure 3 of Kishida, $f_1(x)$ is on the upper side of said predetermined level and $f_2(x)$ is on the lower side of said predetermined level. While the present specification may show features which differ from the features shown in Kishida and Tamura, the limitations specifically recited in claim 21 are indeed taught by the combination of Kishida in view of Tamura.

Applicant argues that the specific limitations recited in claim 21 are not taught by Kishida in view of Tamura.

Examiner replies that claim 21 specifically recites that "the two selected basic compression or expansion characteristics are cascaded to define the *input/output relationship* on *both* the upper level side and the lower level side of the predetermined level for the input value of the luminance data". Claim 21 does not recite that the cascade is defined relative to *one* side of a predetermine level, but both sides. As set forth on pages 19-20 of said previous office action, two curves ($f_1(x)$ and $f_2(x)$) are

selected (column 4, lines 32-37 of Kishida) and used together through weighting to determine the appropriate tone curve ($f_d(x)$) (column 4, lines 38-41 and equation 2 of Kishida) which, as set forth in the arguments regarding claim 20, is used to determine the recited predetermined level. The curve $f_1(x)$ defines the input/output relationship on the upper level side of said predetermined level, and the curve $f_2(x)$ defines the input/output relationship on the lower level side of said predetermined level. By cascading the two curves, both the upper level side and lower level side of said predetermined level are defined, since both sides are used in the determination of the input/output relationship.

Applicant argues that, with regard to claim 22, there is no inherent relation of compression or expansion in relation to size in the teachings of Kishida in view of Tamura.

Examiner replies that Applicant's arguments with respect to claim 22 are found convincing. However, additional prior art has been discovered which demonstrates that claim 22 would have been obvious to one of ordinary skill in the art at the time of the invention.

Conclusion: While there may be differences between what is set forth in Applicant's present specification and the prior art references relied upon in the prior art rejections, the presently recited claims are taught by the prior art of record, as discussed above and set forth in detail below. Applicant is respectfully reminded that, during patent examination, claims are given their broadest reasonable interpretation consistent with the specification (see MPEP §2111), and that, although the claims are considered in light of the specification, limitations

from the specification are not read into the claims (see MPEP §2145(VI)).

Since Applicant's arguments with respect to claim 22 have been found convincing, **the finality of said previous office action is withdrawn.** New prior art rejections, and a new rejection under 35 USC §112, 2nd paragraph, are set forth in detail below. Since the new rejections are based on the claim amendments of 29 March 2006, and are necessitated by said amendments to the claims, the present office action is made final.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 10, 11 and 12 each recite (1) that a plurality of basic compression characteristics or basic expansion characteristics are preliminarily set, and (2) that each characteristic represents an input/output relationship of luminance data *created from the image data* and low-pass filtered. If each characteristic represents an input/output relationship of luminance data created from the image data, and thus requires the image data to generate or set said characteristics, then how can said characteristics be "preliminarily set"? This is an inherent contradiction since, if the characteristics are preliminarily set, then

the characteristics cannot be based on the image data. If the characteristics are based on the image data, then the characteristics are set as part of the overall processing of the image data, and are therefore not preliminarily set.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-3, 5-21 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kishida (US Patent 5,287,418) in view of Tamura (US Patent 5,517,333).

Regarding claim 1: Kishida discloses preliminarily setting a plurality of basic gradation conversion characteristics for a gradation conversion of image data (figure 2(S1) and column 3, lines 16-21 of Kishida), each characteristic representing an input/output relationship of the luminance data (figure 3("INPUT DENSITY","OUTPUT DENSITY") and column 3, lines 22-28 of Kishida) created from the image data (figure 3 and column 3, lines 22-28 of Kishida); selecting one or more basic gradation conversion characteristics from said plurality of gradation conversion characteristics (figure 2(S2); figure 4; and column 3, lines 36-42 of Kishida); and converting the gradation of said image data using the thus selected one or more basic gradation conversion

characteristics (figure 2(S3-S4) and column 4, lines 47-56 of Kishida).

Kishida does not disclose expressly that said basic gradation conversion characteristics are specifically basic compression characteristics and/or basic expansion characteristics; and that the luminance data is low-pass filtered.

Tamura discloses setting a plurality of basic compression and/or basic expansion characteristics for a gradation curve of image data (figure 5(Y1,Y2); and column 8, lines 10-18 and 30-34 of Tamura). The shape of the selected gradation correction curve (Y1 or Y2) determines how the image data is compressed or expanded in each particular luminance level region.

Tamura further discloses low-pass filtering luminance data created from image data (column 8, line 61 to column 9, line 6 of Tamura).

Kishida and Tamura are combinable because they are from the same field of endeavor, namely the adjustment of gradation characteristics between digital image input and digital image output devices, so as to provide an optimal result on the digital image output device. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to compress or expand the dynamic range of the image data and low-pass filter the luminance data, as taught by Tamura, wherein a plurality of said basic compression characteristics or basic expansion characteristics taught by Tamura are preliminarily set, as taught by Kishida. The suggestion for doing so would have been compressing and expanding the dynamic range of the image data, as taught by Tamura, is simply a specific type of the gradation conversion taught by Kishida. By combining Tamura with Kishida, the system of Kishida thus performs a specific

kind of gradation conversion, namely compression and/or expansion, based on the teachings of Tamura. Furthermore, the gradation correction performed by Tamura provides an improved resultant image since the gradation correction is performed based on input image feature quantities (column 2, lines 22-36 of Tamura). Therefore, it would have been obvious to combine Tamura with Kishida to obtain the invention as specified in claim 1.

Regarding claim 2: Kishida in view of Tamura discloses that said plurality of basic compression characteristics or basic expansion characteristics are preliminarily set in accordance with at least one of an original type, an original size, and an analysis result of said image data (column 3, lines 28-36 of Kishida). As demonstrated above in the arguments regarding claim 1, the gradation conversion characteristics taught by Kishida correspond to the basic compression characteristics and basic expansion characteristics taught by Tamura, and are thus taught by combination.

Regarding claim 3: Kishida in view of Tamura discloses that said one or more of said plurality of basic compression characteristics or said plurality of basic expansion characteristics are selected in accordance with at least one of an original type, an original size, and an analysis result of said image data (figure 4 and column 3, lines 41-47 of Kishida). As demonstrated above in the arguments regarding claim 1, the gradation conversion characteristics taught by Kishida correspond to the basic compression characteristics and basic expansion characteristics taught by Tamura, and are thus taught by the combination of Kishida in view of Tamura.

Regarding claim 5: Kishida in view of Tamura discloses that one or more basic compression characteristics or basic

expansion characteristics are selected (column 3, lines 36-42 of Kishida) by a manual operation (figure 4 and column 3, lines 48-54 of Kishida). As demonstrated above in the arguments regarding claim 1, the gradation conversion characteristics taught by Kishida correspond to the basic compression characteristics and basic expansion characteristics taught by Tamura, and are thus taught by the combination of Kishida in view of Tamura.

Regarding claim 6: Kishida in view of Tamura discloses that said basic compression characteristics or basic expansion characteristics are provided as a parameter or a look-up table (figure 4 and column 3, lines 32-36 of Kishida). As demonstrated above in the arguments regarding claim 1, the gradation conversion characteristics taught by Kishida correspond to the basic compression characteristics and basic expansion characteristics taught by Tamura, and are thus taught by the combination of Kishida in view of Tamura.

Regarding claim 7: Kishida in view of Tamura discloses analyzing said image data (column 3, lines 36-42 of Kishida); setting a processing condition for compressing or expanding the gradation of said image information using said selected one or more basic compression characteristics or basic expansion characteristics in accordance with said analysis result (column 3, lines 36-42 of Kishida); and processing said image data in accordance with the thus set processing condition (column 4, lines 48-56 of Kishida). As demonstrated above in the arguments regarding claim 1, the gradation conversion characteristics taught by Kishida correspond to the basic compression characteristics and basic expansion characteristics taught by Tamura, and are thus taught by the combination of Kishida in view of Tamura.

Regarding claim 8: Kishida in view of Tamura discloses setting a processing condition for compressing or expanding the gradation of said image information using said selected one or more basic compression characteristics or basic expansion characteristics (column 3, lines 36-42 of Kishida) by a manual operation (figure 4 and column 3, lines 48-54 of Kishida); and processing said image data in accordance with the thus set processing condition (column 4, lines 48-56 of Kishida). As demonstrated above in the arguments regarding claim 1, the gradation conversion characteristics taught by Kishida correspond to the basic compression characteristics and basic expansion characteristics taught by Tamura, and are thus taught by the combination of Kishida in view of Tamura.

Regarding claim 9: Kishida discloses that said processing condition is set as a look-up table (column 4, lines 52-56 of Kishida).

Regarding claim 10: Kishida discloses preliminarily setting a plurality of basic gradation conversion characteristics for a gradation conversion of image data (figure 2(S1) and column 3, lines 16-21 of Kishida), each characteristic representing an input/output relationship of the luminance data (figure 3("INPUT DENSITY","OUTPUT DENSITY") and column 3, lines 22-28 of Kishida) created from the image data (figure 3 and column 3, lines 22-28 of Kishida); selecting one or more basic gradation conversion characteristics from said plurality of gradation conversion characteristics (figure 2(S2); figure 4; and column 3, lines 36-42 of Kishida); analyzing image data (column 3, lines 36-42 of Kishida); setting a processing condition for converting the gradation of said image data using the thus selected one or more basic conversion characteristics in accordance with said

analysis result obtained by thus analyzing the image data (column 3, lines 36-42 of Kishida); and processing said image data in accordance with the thus set processing condition (column 4, lines 48-56 of Kishida).

Kishida does not disclose expressly that said basic gradation conversion characteristics are specifically basic compression characteristics and/or basic expansion characteristics; and that the luminance data is low-pass filtered.

Tamura discloses setting a plurality of basic compression and/or basic expansion characteristics for a gradation curve of image data (figure 5(Y1,Y2); and column 8, lines 10-18 and 30-34 of Tamura). The shape of the selected gradation correction curve (Y1 or Y2) determines how the image data is compressed or expanded in each particular luminance level region.

Tamura further discloses low-pass filtering luminance data created from image data (column 8, line 61 to column 9, line 6 of Tamura).

Kishida and Tamura are combinable because they are from the same field of endeavor, namely the adjustment of gradation characteristics between digital image input and digital image output devices, so as to provide an optimal result on the digital image output device. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to compress or expand the dynamic range of the image data and low-pass filter the luminance data, as taught by Tamura, wherein a plurality of said basic compression characteristics or basic expansion characteristics taught by Tamura are preliminarily set, as taught by Kishida. The suggestion for doing so would have been compressing and expanding the dynamic range of the image data, as taught by Tamura, is simply a specific type of

the gradation conversion taught by Kishida. By combining Tamura with Kishida, the system of Kishida thus performs a specific kind of gradation conversion, namely compression and/or expansion, based on the teachings of Tamura. Furthermore, the gradation correction performed by Tamura provides an improved resultant image since the gradation correction is performed based on input image feature quantities (column 2, lines 22-36 of Tamura). Therefore, it would have been obvious to combine Tamura with Kishida to obtain the invention as specified in claim 10.

Regarding claim 11: Kishida discloses preliminarily setting a plurality of basic gradation conversion characteristics for a gradation conversion of image data (figure 2(S1) and column 3, lines 16-21 of Kishida), each characteristic representing an input/output relationship of the luminance data (figure 3("INPUT DENSITY","OUTPUT DENSITY") and column 3, lines 22-28 of Kishida) created from the image data (figure 3 and column 3, lines 22-28 of Kishida); selecting one or more basic gradation conversion characteristics from said plurality of gradation conversion characteristics (figure 2(S2); figure 4; and column 3, lines 36-42 of Kishida); setting a processing condition for converting the gradation of said image data using the thus selected one or more basic conversion characteristics (column 3, lines 36-42 of Kishida) by a manual operation (figure 4 and column 3, lines 48-54 of Kishida); and processing said image data in accordance with the thus set processing condition (column 4, lines 48-56 of Kishida).

Kishida does not disclose expressly that said basic gradation conversion characteristics are specifically basic compression characteristics and/or basic expansion characteristics; and that the luminance data is low-pass filtered.

Tamura discloses setting a plurality of basic compression and/or basic expansion characteristics for a gradation curve of image data (figure 5(Y1,Y2); and column 8, lines 10-18 and 30-34 of Tamura). The shape of the selected gradation correction curve (Y1 or Y2) determines how the image data is compressed or expanded in each particular luminance level region.

Tamura further discloses low-pass filtering luminance data created from image data (column 8, line 61 to column 9, line 6 of Tamura).

Kishida and Tamura are combinable because they are from the same field of endeavor, namely the adjustment of gradation characteristics between digital image input and digital image output devices, so as to provide an optimal result on the digital image output device. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to compress or expand the dynamic range of the image data and low-pass filter the luminance data, as taught by Tamura, wherein a plurality of said basic compression characteristics or basic expansion characteristics taught by Tamura are preliminarily set, as taught by Kishida. The suggestion for doing so would have been compressing and expanding the dynamic range of the image data, as taught by Tamura, is simply a specific type of the gradation conversion taught by Kishida. By combining Tamura with Kishida, the system of Kishida thus performs a specific kind of gradation conversion, namely compression and/or expansion, based on the teachings of Tamura. Furthermore, the gradation correction performed by Tamura provides an improved resultant image since the gradation correction is performed based on input image feature quantities (column 2, lines 22-36 of Tamura).

Therefore, it would have been obvious to combine Tamura with Kishida to obtain the invention as specified in claim 11.

Regarding claim 12: Kishida discloses a selecting device (figure 4 of Kishida) for selecting one or more basic gradation conversion characteristics (figure 2(S2); and column 3, lines 36-42 of Kishida) from preliminarily set plurality of basic gradation conversion characteristics of image data (figure 2(S1) and column 3, lines 16-21 of Kishida) for use in gradation conversion of image data supplied by an image information supply source (column 4, lines 46-56 of Kishida), each characteristic representing an input/output relationship of the luminance data (figure 3("INPUT DENSITY","OUTPUT DENSITY") and column 3, lines 22-28 of Kishida) created from the image data (figure 3 and column 3, lines 22-28 of Kishida); and an image processing device (figure 1(5) of Kishida) for converting the gradation of said image data using the thus selected one or more basic gradation conversion characteristics selected by said selecting device (figure 2(S3-S4) and column 4, lines 47-56 of Kishida).

Kishida does not disclose expressly that said basic gradation conversion characteristics are specifically basic compression characteristics and/or basic expansion characteristics; and that the luminance data is low-pass filtered.

Tamura discloses setting a plurality of basic compression and/or basic expansion characteristics for a gradation curve of image data (figure 5(Y1,Y2); and column 8, lines 10-18 and 30-34 of Tamura). The shape of the selected gradation correction curve (Y1 or Y2) determines how the image data is compressed or expanded in each particular luminance level region.

Tamura further discloses low-pass filtering luminance data created from image data (column 8, line 61 to column 9, line 6 of Tamura).

Kishida and Tamura are combinable because they are from the same field of endeavor, namely the adjustment of gradation characteristics between digital image input and digital image output devices, so as to provide an optimal result on the digital image output device. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to compress or expand the dynamic range of the image data and low-pass filter the luminance data, as taught by Tamura, wherein a plurality of said basic compression characteristics or basic expansion characteristics taught by Tamura are preliminarily set, as taught by Kishida. The suggestion for doing so would have been compressing and expanding the dynamic range of the image data, as taught by Tamura, is simply a specific type of the gradation conversion taught by Kishida. By combining Tamura with Kishida, the system of Kishida thus performs a specific kind of gradation conversion, namely compression and/or expansion, based on the teachings of Tamura. Furthermore, the gradation correction performed by Tamura provides an improved resultant image since the gradation correction is performed based on input image feature quantities (column 2, lines 22-36 of Tamura). Therefore, it would have been obvious to combine Tamura with Kishida to obtain the invention as specified in claim 12.

Regarding claim 13: Kishida in view of Tamura discloses a setting section (figure 1(51) of Kishida) for analyzing the image data (column 3, lines 36-42 of Kishida) and setting a processing condition for compressing or expanding the gradation of said image data using said one or more basic compression

characteristics or basic expansion characteristics selected by said selecting device in accordance with an analyzing result obtained by thus analyzing the image data (column 3, lines 36-42 of Kishida), wherein said image processing device processes said image data in accordance with the processing condition set by said setting section (column 4, lines 48-56 of Kishida). As demonstrated above in the arguments regarding claim 12, the gradation conversion characteristics taught by Kishida correspond to the basic compression characteristics and basic expansion characteristics taught by Tamura, and are thus taught by the combination of Kishida in view of Tamura.

Regarding claim 14: Kishida in view of Tamura discloses a setting section (figure 1(51) of Kishida) for setting a processing condition for compressing or expanding the gradation of said image data by a manual operation (figure 4 and column 3, lines 48-54 of Kishida) using said selected one or more basic compression characteristics or basic expansion characteristics selected by said selecting device (column 3, lines 36-42 of Kishida), wherein said image processing device processes said image data in accordance with the processing condition set by said setting section (column 4, lines 48-56 of Kishida). As demonstrated above in the arguments regarding claim 12, the gradation conversion characteristics taught by Kishida correspond to the basic compression characteristics and basic expansion characteristics taught by Tamura, and are thus taught by the combination of Kishida in view of Tamura.

Regarding claim 15: Kishida in view of Tamura discloses that said selecting device selects said one or more basic compression characteristics or basic expansion characteristics in accordance with at least one of an original type of an image

as an image data source, and an original size of the image as an image data source (figure 4 and column 3, lines 41-47 of Kishida). As demonstrated above in the arguments regarding claim 12, the gradation conversion characteristics taught by Kishida correspond to the basic compression characteristics and basic expansion characteristics taught by Tamura, and are thus taught by the combination of Kishida in view of Tamura.

Regarding claim 16: Kishida in view of Tamura discloses selecting at least two of the basic compression characteristics and basic expansion characteristics as selected characteristic sets ($f_1(x)$ and $f_2(x)$) (column 4, lines 32-37 of Kishida) and cascading the selected characteristic sets (column 4, lines 38-41 and equation 2 of Kishida). Two curves ($f_1(x)$ and $f_2(x)$) are selected (column 4, lines 32-37 of Kishida) and used together through weighting to determine the appropriate tone curve ($f_d(x)$) (column 4, lines 38-41 and equation 2 of Kishida). As demonstrated above in the arguments regarding claim 1, the gradation conversion characteristics taught by Kishida correspond to the basic compression characteristics and basic expansion characteristics taught by Tamura, and are thus taught by the combination of Kishida in view of Tamura.

Regarding claim 17: Kishida in view of Tamura discloses that the preliminary setting of basic compression characteristics or basic expansion characteristics are preset in memory (column 3, lines 19-21 of Kishida). As demonstrated above in the arguments regarding claim 1, the gradation conversion characteristics taught by Kishida correspond to the basic compression characteristics and basic expansion characteristics taught by Tamura, and are thus taught by the combination of Kishida in view of Tamura.

Regarding claim 18: Kishida in view of Tamura discloses that, in the selecting device, selecting one or more basic compression characteristics or basic expansion characteristics comprises selecting at least two of the basic compression characteristics and basic expansion characteristics as selected characteristic sets ($f_1(x)$ and $f_2(x)$) (column 4, lines 32-37 of Kishida) and cascading the selected characteristic sets (column 4, lines 38-41 and equation 2 of Kishida). Two curves ($f_1(x)$ and $f_2(x)$) are selected (column 4, lines 32-37 of Kishida) and used together through weighting to determine the appropriate tone curve ($f_d(x)$) (column 4, lines 38-41 and equation 2 of Kishida). As demonstrated above in the arguments regarding claim 1, the gradation conversion characteristics taught by Kishida correspond to the basic compression characteristics and basic expansion characteristics taught by Tamura, and are thus taught by the combination of Kishida in view of Tamura.

Regarding claim 19: Kishida in view of Tamura discloses a memory (figure 1(56) of Kishida), wherein the preliminary setting of basic compression characteristics or basic expansion characteristics are preset in the memory (column 3, lines 19-21 of Kishida). As demonstrated above in the arguments regarding claim 12, the gradation conversion characteristics taught by Kishida correspond to the basic compression characteristics and basic expansion characteristics taught by Tamura, and are thus taught by the combination of Kishida in view of Tamura.

Regarding claim 20: Kishida in view of Tamura discloses that the input/output relationship of the luminance data (figure 3("INPUT DENSITY","OUTPUT DENSITY") and column 3, lines 22-28 of Kishida) is defined on at least one side of an upper level and a lower level side of a predetermined level for an input value of

the luminance data (figure 3($f_1(x)$,$f_d(x)$) of Kishida). The variable $f_1(x)$ is set on the upper side of $f_d(x)$. The variable $f_d(x)$ is calculated to determine the output color level (column 4, lines 38-41 of Kishida).

Kishida in view of Tamura further discloses that two basic compression or expansion characteristics are selected ($f_1(x)$ and $f_2(x)$) (column 4, lines 32-37 of Kishida), one of the two characteristics representing a relationship defined on either side of the upper level side or the lower level side (figure 3($f_1(x)$, $f_d(x)$) of Kishida), and another of the two characteristics representing a relationship defined on the other side (figure 3 ($f_2(x)$,$f_d(x)$) of Kishida). The variable $f_1(x)$ is set on the upper side of $f_d(x)$. The variable $f_2(x)$ is set on the lower side of $f_d(x)$. The variable $f_d(x)$ is calculated to determine the output color level (column 4, lines 38-41 of Kishida). As demonstrated above in the arguments regarding claim 1, the gradation conversion characteristics taught by Kishida correspond to the basic compression characteristics and basic expansion characteristics taught by Tamura, and are thus taught by the combination of Kishida in view of Tamura.

Further regarding claim 21: Kishida discloses that the two selected basic compression or expansion characteristics ($f_1(x)$ and $f_2(x)$) are cascaded to define the input/output relationship ($f_d(x)$) on both the upper level side and the lower level side of the predetermined level for the input value of the luminance data (column 4, lines 38-41 and equation 2 of Kishida). Two curves ($f_1(x)$ and $f_2(x)$) are selected (column 4, lines 32-37 of Kishida) and used together through weighting to determine the appropriate tone curve ($f_d(x)$) (column 4, lines 38-41 and equation 2 of Kishida).

Further regarding claim 23: Tamura discloses that said plurality of basic compression characteristics or basic expansion characteristics are processed across an entire density range of the image data (figure 5 and column 5, lines 18-35 of Tamura).

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kishida (US Patent 5,287,418) in view of Tamura (US Patent 5,517,333) and well-known prior art.

Regarding claim 4: Kishida in view of Tamura discloses that said plurality of basic compression characteristics or basic expansion characteristics are preliminarily set in accordance with at least one of an original type, an original size, and an analysis result of said image data (column 3, lines 28-36 of Kishida). As demonstrated above in the arguments regarding claim 1, the gradation conversion characteristics taught by Kishida correspond to the basic compression characteristics and basic expansion characteristics taught by Tamura, and are thus taught by combination.

Kishida in view of Tamura does not disclose expressly that said original type is at least one of a negative film, a reversal film, and a black-and-white film, and wherein said original size is at least one of a 135 size, a 240 size and a 120/220 size.

In the previous office action, dated 25 April 2005 and mailed 27 May 2005, and in the first office action, dated 21 July 2004 and mailed 29 July 2004, Official Notice was taken that the negative film, reversal film, and black-and white film types and the 135, 240 and 120/220 film sizes are old, well-known and expected in the art. Since no timely dispute has been

filed, this is **now considered accepted by Applicant to be well-known prior art.** It would have been obvious to one of ordinary skill in the art to use as the original type at least one of a negative film, a reversal film, and a black-and-white film since negative film is a standard format used to process film images, a reversal film is a standard format for direct projection and viewing of film images, and black-and-white film is gives clear images based on grayscale levels. All of these types of films are common types that can be used as hardcopy input types to be scanned. Further, it would have been obvious to one of ordinary skill in the art to use as the original size one of a 135 size, a 240 size, and a 120/220 size since said sizes are common sizes used to produce printed images.

7. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kishida (US Patent 5,287,418) in view of Tamura (US Patent 5,517,333) and Kurumisawa (US Patent 6,048,111).

Regarding claim 22: Kishida in view of Tamura does not disclose expressly that said plurality of basic compression characteristics or basic expansion characteristics are preliminarily set in accordance with an original size.

Kurumisawa teaches in the background that exposure time, which affects the gradation characteristics of an image, can be set based on an original size of an image (column 2, lines 39-46 of Kurumisawa). Thus, basic compression characteristics and basic expansion characteristics of an image can be set in accordance with an original size (column 2, lines 39-46 of Kurumisawa).

Kishida in view of Tamura is combinable with Kurumisawa because they are from similar problem solving areas, namely the adjustment and setting of gradation correction characteristics for image data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to specifically set the plurality of basic compression characteristics or basic expansion characteristics taught by Kishida in view of Tamura in accordance with an original size, as taught by Kurumisawa. The suggestion for doing so would have been exposure and gradation conditions are directly affected by the original size of the image (column 2, lines 39-46 of Kurumisawa). Thus, one of ordinary skill in the art at the time of the invention would clearly have seen that it would be advantageous to set basic compression characteristics and basic expansion characteristics in accordance with an original image size since an original image size has such a direct influence on the basic compression and expansion characteristics. Therefore, it would have been obvious to combine Kurumisawa with Kishida in view of Tamura to obtain the invention as specified in claim 22.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Katayama et al, US Patent 6,424,752 B1, Patented 23 July 2002, Filed 30 September 1998.

b. Akihiro Nomura, US Patent 5,053,888, Patented 01 October 1991.

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Thompson whose telephone number is 571-272-7441. The examiner can normally be reached on 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K. Moore can be reached on 571-272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

James A. Thompson
Examiner
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18 September 2006

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